



# Problem Based Learning

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# Objectives

At the end of this session, the participant should be able to:

- Define or describe problem based learning
- Discuss advantages and disadvantages of problem based learning
- Understand the role of the student and the professor in problem based learning
- Understand how problem based learning works based on the demonstration
- Understand the kind of skills developed through problem based learning
- Discuss the diagnosis, risk factors and management of hypertensive disease and eclampsia in pregnancy



# Problem Based Learning: Basic Features

Definition and implementation vary

3 chief characteristics:

- Students are given challenging, open-ended questions which drive the learning process
- Students work in a small collaborative group
- Teachers take on the role of facilitator as opposed to instructor

# Problem Based Learning: Students

Student groups are presented a problem likely to happen in a real scenario.

Students:

- Take responsibility for their group
- Determine what they already know and what they need to learn to solve the problem
- Organize and direct their own learning process (with the support of their faculty facilitator)
- Present their findings and suggest solutions

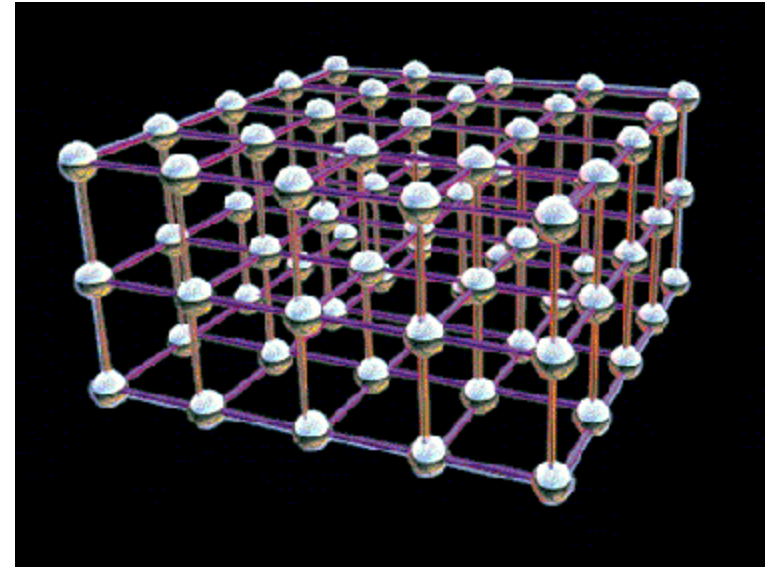
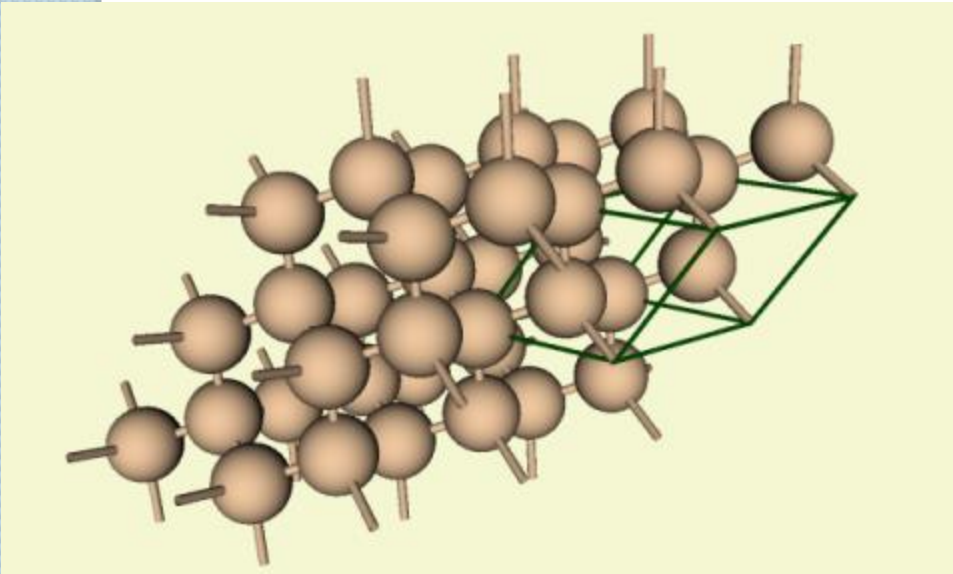
# Problem based learning: Professor

- Helps facilitate group discussions
- Helps generate problem solving skills
- Guides the learning process rather than providing knowledge directly
- Also provided feedback on the learning process and group dynamics
- At the completion of the case, reviews student findings and solution and presents the ideal solution. Facilitates discussion.

# Problem Based Learning

Emphasis:

Making meaning > Fact-  
collecting



# Problem Based Learning: Cognitive effects

The acquisition and structuring of knowledge in PBL is through:

- initial analysis of the problem and activation of prior knowledge through small-group discussion
- elaboration on prior knowledge and active processing of new information
- restructuring of knowledge, construction of a semantic network
- social knowledge construction
- learning in context
- stimulation of curiosity related to presentation of a relevant problem

Schmidt, 1993

from *Problem Based Learning*, wikipedia

# Problem based learning (PBL)

- 80% of U.S. Medical Schools no use some form of problem based learning in their curriculums.
- Requires resources such as a good library and computer data bases:
  - Pubmed
  - OVID
  - Electronic journal subscriptions



Hypertension in Pregnancy



# DEMONSTRATION

[http://www.womenshealth.gov/hearttruth/pdf/cases\\_students.pdf](http://www.womenshealth.gov/hearttruth/pdf/cases_students.pdf)



## **EXAMPLE 2**



# **What Are The Advantages And Disadvantages Of Problem Based Learning?**

# Problem based learning: Advantages

- Uses real patient cases to teach students how to think like clinicians
- Learning is done in context and increases:
  - Comprehension
  - Learning and knowledge-forming skills
  - Social skills
- Promotes skills necessary for life-long learning
- Motivates students to learn with applicable, interesting tasks

# Problem based learning:

## Disadvantages

- Requires more faculty time and therefore can be more costly

*Student contact hours 3-4x greater for educators in PBL curriculum than traditional (Koh et al, 2008).*

- Difficult to balance letting students struggle with the learning process and keeping them from going too far off course
- Potential for frustration

# Meta-analysis of PBL outcomes

13 studies from U.S., Netherlands, Australia and Canada

- Traditional vs. PBL educated students:
- PBL students better at social and cognitive skills:
  - coping with uncertainty
  - appreciation of legal and ethical aspects of health care
  - communication skills
  - self-directed continuing learning
- In 3/13 studies PBL students scored lower at understanding disease processes. No difference overall.

*Koh et al, 2008*

# Diminishing frustration for students

- Tailor tasks to learning level
- Give instruction on research sources and skills
- Be clear about whether the question is a convergent or divergent question
- Consider:
  - Starting with worked examples and progress to more challenging problems.
  - Starting with directions for which resources to use and then giving less instruction
  - Supplementing with other learning methodologies

# Tips to prepare a Problem Based Learning Lesson

- Remember to start with your learning objectives
- Keep questions open-ended but clear
- Require evidence based answers and reinforce the evidence base in discussion
- Ask for regular feedback from students



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